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Dr. John C. Bugher, M.D., Director
Division of Biology and Medicine

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Gordon M. Dunning, Health Physicist
Biophysics Branch, Division of Biology and Medicine

ESTIMATED SR^{90} CONTENT IN SOILS FROM THE PACIFIC ISLANDS

SYMBOL: BMBP:GMD

The attached sheet gives a summary of the data on the Sr^{89}-Sr^{90} and Sr^{90} for soils taken from the Pacific Islands indicated.

The Sr^{89}-Sr^{90} activity was measured and then the Sr^{90} activity was estimated from this by the use of the Hunter and Ballou tables. Likewise, the total activity was measured and the activity of Sr^{89}-Sr^{90} was estimated from this by the use of Hunter and Ballou tables. One may thus compare the Sr^{89}-Sr^{90} activity as measured with the estimated amounts calculated from the total activity.

The highest Sr^{90} value was 0.5 μc/sq.ft. on the island of Naen. The highest Sr^{90} value on Rongelap Island was 1.6×10^{-2} μc/sq.ft. It has been estimated* that if one were to exist entirely on plant life grown in soils with 1,000 lbs. of calcium per acre and containing 45 mc/acre of Sr^{90} (about 1 μc/sq.ft.), over a period of years there would be deposited a body burden of 1 μc of Sr^{90}. In the case of these soils the following points should be indicated:

(1) Only a small fraction of the natives' food supply comes from plant life grown on the islands. (Most of their diet consists of fish and food supplies purchased from visiting ships.)

(2) The calcium content is significantly greater than 1,000 lbs. per acre which will correspondingly reduce the Sr^{90} uptake.

(3) Weathering may be expected to eliminate a small amount of the activity.

These data would indicate that the Sr^{90} activity of the soils would not be a deterrent to the return of the natives to their home islands.

*Private communication from Dr. L.A.Dean, U.S.Dept. of Agriculture, to Dr. Gordon Dunning, dtd 4/23/54.

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ESTIMATE OF Sr^{90} IN SOILS OF PACIFIC ISLANDS

Location	Sr^{90} (μc/ft²) (Estimated from Sr^{89}-Sr^{90} Activity)	Sr^{89}-Sr^{90} (μc/ft²) (Measured)	Total Activity (μc/ft²) (Measured)	Sr^{89}-Sr^{90} (μc/ft²) (Estimated from Total Activity)
Likiep*	1.3×10^{-4}	3.7×10^{-3}	1.2×10^{-1}	1.2×10^{-2}
Jemo	1.8×10^{-4}	1.2×10^{-2}	3.0×10^{-1}	3.0×10^{-2}
Ailuk	5.7×10^{-4}	3.8×10^{-2}	1.0	1.0×10^{-1}
Mejuit	4.2×10^{-4}	2.8×10^{-2}	1.1	1.1×10^{-1}
Ormed	1.6×10^{-4}	1.1×10^{-2}	3.2×10^{-1}	3.2×10^{-2}
Kaven	7.2×10^{-5}	4.8×10^{-3}	1.6×10^{-1}	1.6×10^{-2}
Rotho	2.0×10^{-5}	1.3×10^{-3}	7.8×10^{-2}	7.8×10^{-3}
Rongelap (Northern)	1.6×10^{-2}	1.08	62.0	6.2
(Central)	8.3×10^{-3}	5.5×10^{-1}	40.0	4.0
(1 mi. N. Village)	7.4×10^{-3}	5.3×10^{-1}	5.0	5.0×10^{-1}
(So. Cistern)	1.4×10^{-2}	9.2×10^{-1}	4.5	4.5×10^{-1}
Friirippu*	3.0×10^{-1}	12.5	230.0	23.0
Rairetok	1.8×10^{-2}	1.2	50.0	5.0
Kabelle	7.4×10^{-2}	4.9	200.0	20.0
Utirik	1.5×10^{-3}	9.8×10^{-2}	53.0	5.3
Bikar	6.6×10^{-3}	4.4×10^{-1}	3.3	3.3×10^{-1}
Taivetak	9.9×10^{-3}	6.6×10^{-1}	8.0	8.0×10^{-1}
Ailo	1.4×10^{-3}	9.6×10^{-2}	6.1×10^{-1}	6.1×10^{-2}
Naen**	5.0×10^{-1}			

DOE ARCHIVES

*All data as of May 5, 1954, except Island of Friirippu where date is May 20.
**Estimated from comparison with dose-rate survey readings with Friirippu. Highest fallout on any island measured.

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